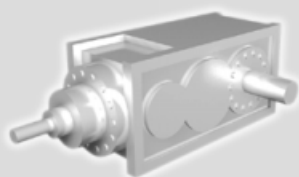
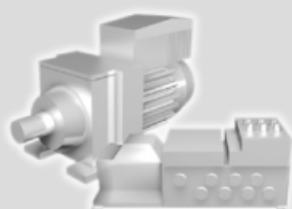
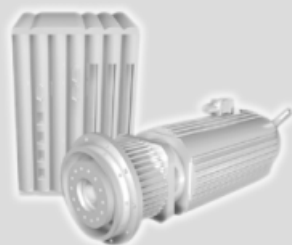
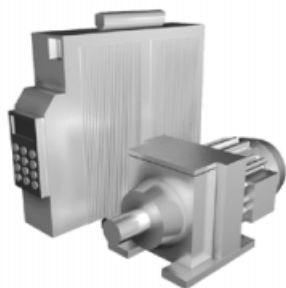




SEW
EURODRIVE



Explosion-Proof VARIMOT® Variable Speed Gear Units and Accessories

Edition 11/2006

11529016 / EN

Operating Instructions





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1 Important Information about the Operating Instructions

Introduction

You must follow the information in the operating instructions to ensure trouble-free operation and for the fulfillment of any rights to claim under the limited warranty. Read the operating instructions before you start working with the unit.

Make sure that the operating instructions are available to persons responsible for the system and its operation, as well as to persons who work independently on the unit.

Also observe other technical documents, contracts for delivery or other agreements.

Intended use

VARIMOT® variable speed gear units are intended for commercial and industrial systems and may only be used in accordance with the information provided in SEW-EURODRIVE's technical documentation and the information given on the nameplate. It corresponds to valid standards and regulations and meet the requirements of EC Directive 94/9/EC and the EC Directive for Machinery 98/37/EC.

Gear unit loads other than those specified and areas of application other than industrial and commercial systems can only be used after consultation with SEW-EURODRIVE.

Any application other than those mentioned is considered non-intended use.

A drive motor connected to the VARIMOT® may not be operated on the frequency inverter.

Qualified personnel

VARIMOT® variable speed gear units represent a potential hazard for persons and material. Consequently, assembly, installation, startup and service work may only be performed by trained personnel who are aware of the potential hazards.

Personnel must possess the required qualifications for the relevant task and be familiar with the:

- Assembly
- Installation
- Startup
- Operation
- Maintenance
- Servicing

of the product.

Personnel must carefully read the operating instructions, in particular the safety notes section, and understand and comply with them.



Exclusion of liability

You must comply with the information contained in these operating instructions to ensure safe operation of the VARIMOT® variable speed gear unit and to achieve the specified product characteristics and performance requirements.

SEW-EURODRIVE GmbH & Co KG assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.

Product names and trademarks

The brands and product names contained within these operating instructions are trademarks or registered trademarks of the titleholders.

Waste disposal



(Please follow the current instructions):

- Housing parts, gears, shafts and anti-friction bearings of the gear unit must be disposed of as steel scrap. This also applies to gray-cast iron parts if there is no special collection.
- Collect waste oil and dispose of it according to the regulations in force.



Important Information about the Operating Instructions

Explanation of symbols

1.1 Explanation of symbols

The operating instructions contain important information that deals with general and operational safety. This information is emphasized in particular with the following symbols.

**Electrical hazard**

Possible consequences: Severe or fatal injuries.

**Hazard**

Possible consequences: Severe or fatal injuries.

**Hazardous situation**

Possible consequences: Slight or minor injuries.

**Harmful situation**

Possible consequences: Damage to the drive and the environment.



Tips and useful information.



Important information about explosion protection.



2 Safety Notes

2.1 Safety notes for the use of VARIMOT®

The following safety notes apply to variable speed gear units.



When using **variable speed gearmotors**, also refer to the safety notes for gear units and motors in the relevant operating instructions.

Take into consideration the supplementary safety notes in the individual sections of these operating instructions.



Explosive gas mixtures or dust concentrations when combined with hot, live, and moving parts of electrical machinery can cause serious injury or death.

Assembly, connection, startup, maintenance and repair work on the VARIMOT® variable speed gear units and the optional electrical components may only be performed by qualified personnel while taking the following into account:

- These operating instructions
- Warning and instruction labels on the variable speed gear unit/variable speed gear-motor
- All other project planning documents, operating instructions and wiring diagrams belonging to the drive
- The specific regulations and requirements for the system
- National/regional regulations on explosion protection, safety, and prevention of accidents that are currently in effect

Optional equipment



Optional equipment complies with existing standards and regulations:

- EN 50014
- EN 50018 for protection type "d"
- EN 50019 for protection type "e"
- EN 50020 intrinsically safe "i"
- EN 50281-1-1/EN 50281-1-2 "Electrical apparatus for use in the presence of combustible dust"

In addition to general installation guidelines, the following regulations in accordance with ElexV 1 (or other national regulations) must be observed for electrically operated options:



- EN 60079-14 "Electrical apparatus for explosive gas atmospheres"
- EN 50281-1-2 "Electrical apparatus for use in the presence of combustible dust"
- DIN VDE 105-9 "Operating electrical equipment" or other national regulations
- DIN VDE 0100 "Erection of power installations with rated voltages below 1000 V" or other national regulations
- System-specific regulations

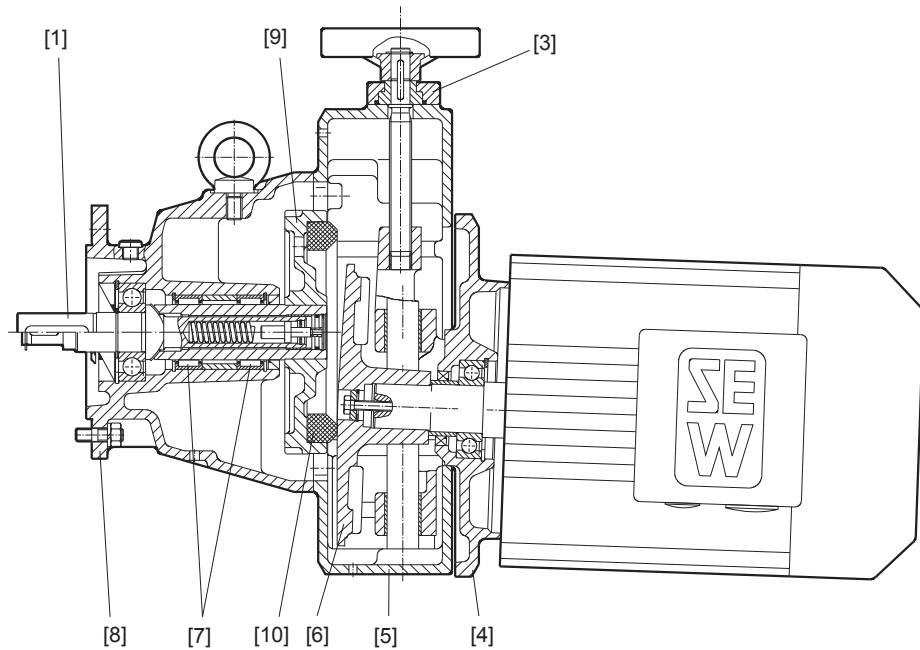
Technical data and information on approved conditions on site can be found on the nameplate and in these operating instructions.

These details must be strictly observed.



3 VARIMOT® in Explosion-Proof Version

3.1 Unit design



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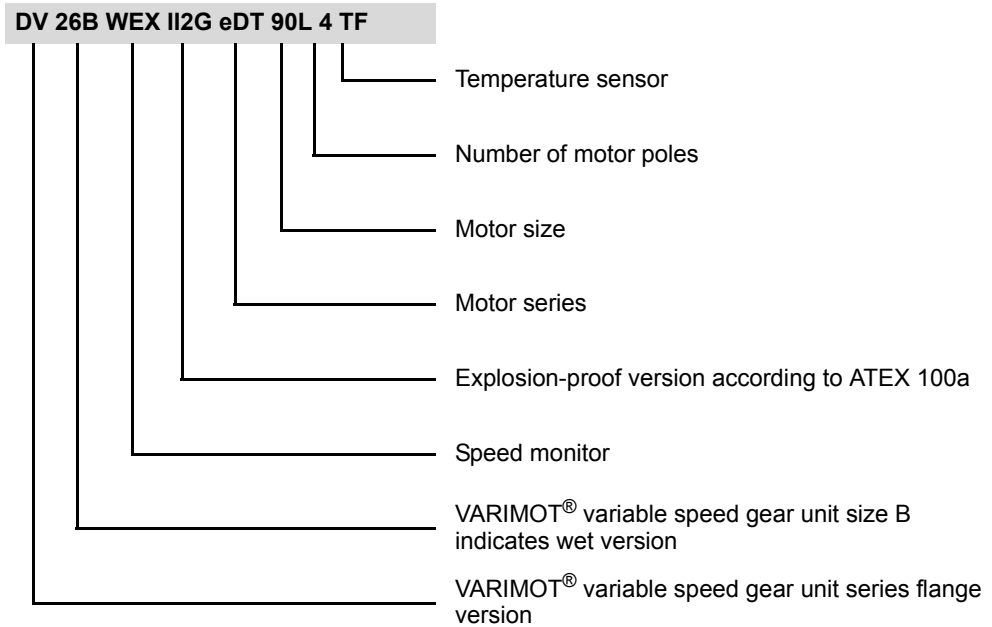
Fig. 1: VARIMOT® in explosion-proof version

- [1] Complete output shaft
- [3] Plate
- [4] Adjusting plate
- [5] Housing cover
- [6] Drive disk
- [7] Needle bearing
- [8] Housing with tapped hole
- [9] Complete hollow shaft
- [10] Friction ring



3.2 Unit designation

The following diagram shows the type code structure:





3.3 Nameplate

Example

SEW-EURODRIVE		Bruchsal / Germany			
Typ	DF36/A/IGEX/II2G	R	1:	5	
Nr.	01.1151703702.0001.06	n_e r/min		1440	
n_a r/min	159/798	P_e kW		3.6	
M_a Nm	84/38	kg		104.242	
IM	M4	i	=	168	
Bedienungsanleitung muss beachtet werden Zum Einbau in Kompletantrieb					
RX77 D36/IGEX/II2G eDV112M4/C					
II2G / T3					
Lagerfett synth. KHC2R		Made in Germany		150 881 4.10	

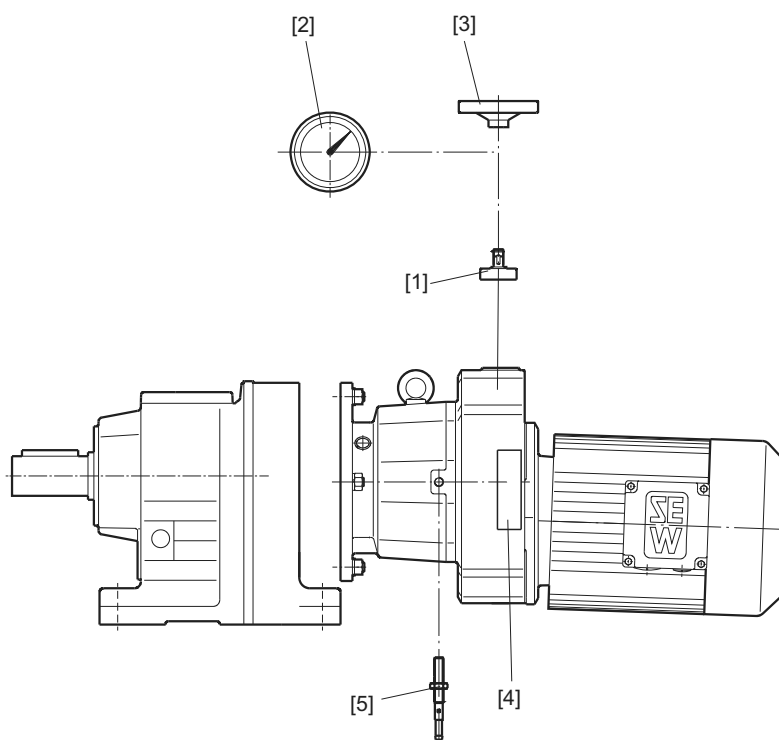
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Fig. 2: Nameplate

Typ	Type code
Nr.	Sales order number
n_a	Minimum and maximum output speed
M_a	Output torque at minimum and maximum output speed
IM	Mounting position
R	Control range
n_e	Input speed
P_e	Input power
kg	Weight
i	Gear ratio



3.4 Overview of mounting options



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Fig. 3: Overview of mounting options

- [1] Adjustment device with free shaft end NV
- [2] Adjustment device with handwheel and position indication HS
- [3] Adjustment device with handwheel (standard version)
- [4] Indicator scale
- [5] Voltage encoder IGEX



4 Installation



Strictly observe the safety notes on page 7 when installing the variable speed gear unit.

4.1 VARIMOT® in category 2G

General information

- SEW explosion-proof variable speed gear units of the **VARIMOT® D/DF 16-46 series** and **VARIMOT® D/DF 16-46B** series meet the design requirements of **equipment group II, category 2G** (explosive gas atmosphere). These units are intended for use in **zones 1 and 2**.
- A standard feature of the SEW-EURODRIVE explosion-proof variable speed gear units of the VARIMOT® series is a tapped hole for installing a voltage encoder.

Designation "X"

- If the designation "X" appears after the certification number on the declaration of conformity or the EC prototype test certificate, this indicates the certificate contains special conditions for safe application of the variable gear unit.

Temperature class

- VARIMOT® variable speed gear units, category 2G (explosive gas atmosphere) are approved for temperature class T3. The temperature class of the variable speed gear unit is indicated on the nameplate.

Ambient temperature

- VARIMOT® variable speed gear units may only be used at an ambient temperature of -20 °C (-4 °F) to $+40\text{ °C}$ ($+104\text{ °F}$).

Output power and output torque

- It is essential that nominal values of output power and/or output torque are maintained.

Speed monitoring

- VARIMOT® variable speed gear units in category 2G may only be operated with a speed monitoring device. The speed monitor must be correctly installed and adjusted (see Sec. "Startup", Speed monitoring).



Verify the speed monitoring function before startup.



4.2 VARIMOT® in categories 3G and 3D

General information

- SEW-EURODRIVE explosion-proof variable speed gear units of the **VARIMOT® D/DF 16-46** and **VARIMOT® D/DF 16-46B** series meet the design requirements of equipment group II, **categories 3G** (explosive gas atmosphere) and **3D** (explosive dust atmospheres). These units are intended for use in **zones 2 and 22**.
- A standard feature of the SEW-EURODRIVE explosion-proof variable speed gear units of the VARIMOT® series is a tapped hole for installing a voltage encoder.

Temperature class

- VARIMOT® variable speed gear units of category 3G (explosive gas atmosphere) are approved for temperature class T3. The temperature class of the variable speed gear unit is indicated on the nameplate.

Surface temperature

- The maximum surface temperature of VARIMOT® variable speed gear units, category 3D (explosive dust atmosphere) may not exceed 200 °C (392 °F). The system operator must guarantee that a possible accumulation of dust will not exceed a maximum thickness of 5 mm, in accordance with EN 50281-1-2.

Ambient temperature

- VARIMOT® variable speed gear units may only be used at an ambient temperature of –20 °C (–4 °F) to +40 °C (+104 °F).

Output power and output torque

- It is essential that nominal values of output power and/or output torque are maintained.

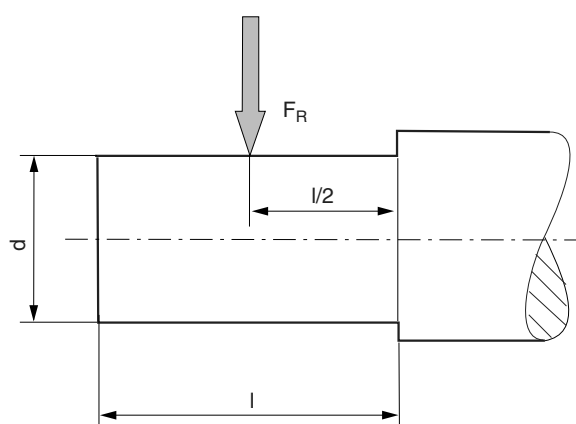


If an overload condition of the VARIMOT® as category 3G or 3D unit cannot be ruled out during normal operation, a VARIMOT® unit with a functioning speed monitor must be used (see Sec. "Startup", Speed monitoring).

4.3 Permitted overhung loads without primary gear unit

Definition of force application of overhung loads

The development of the overhung load depicted in the diagrams refers to a point of application at mid-point of the shaft extension as indicated in Figure 1. If force is applied to areas other than the center of the shaft end, consult SEW-EURODRIVE for permitted lateral forces.



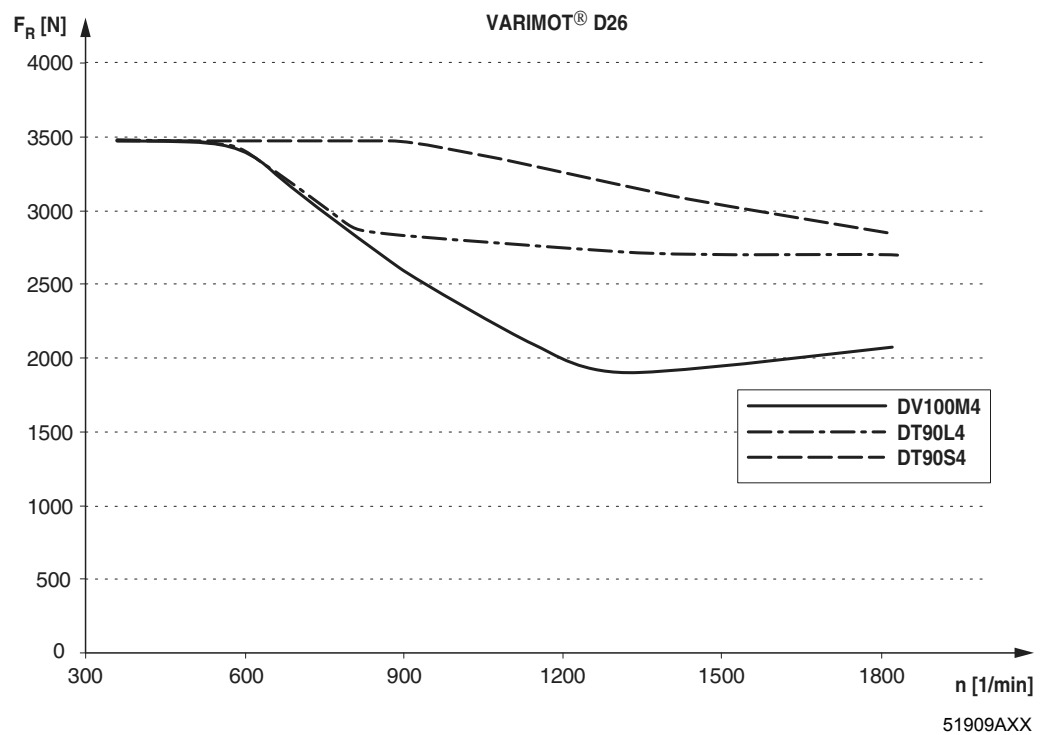
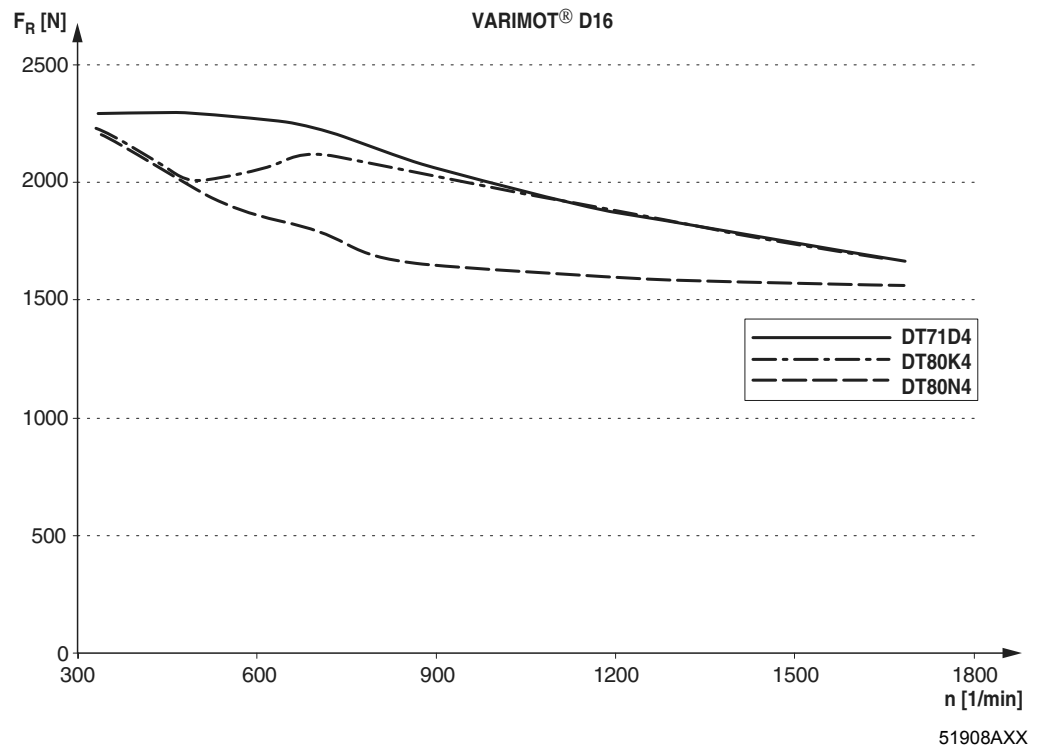
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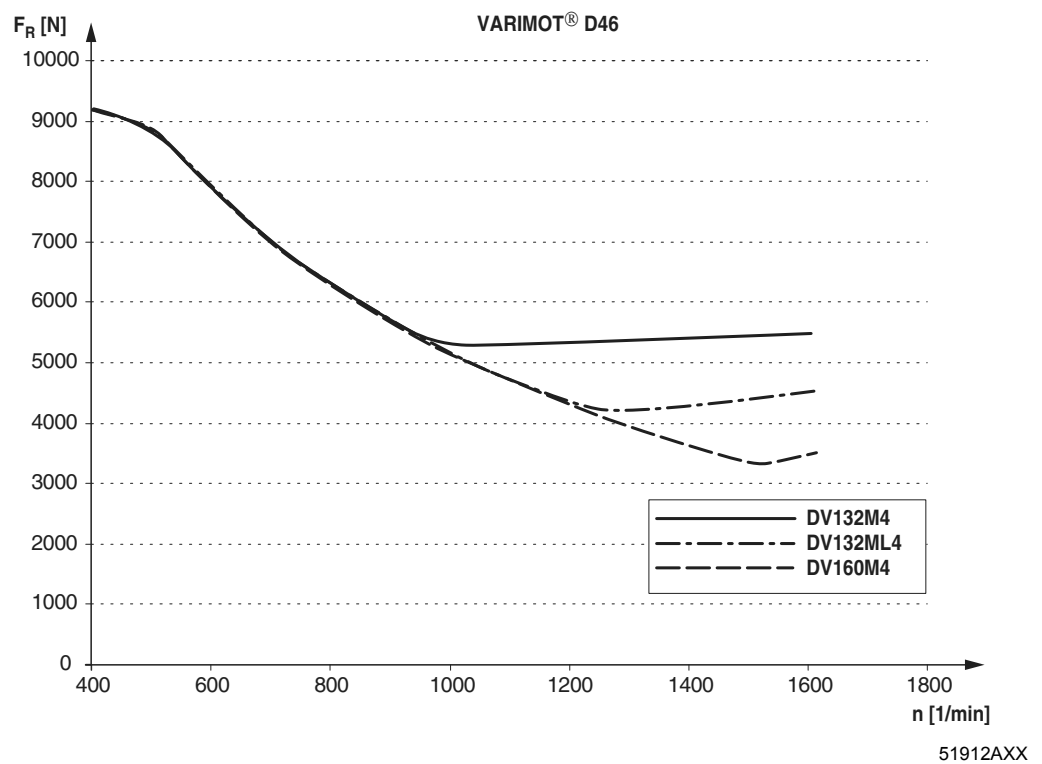
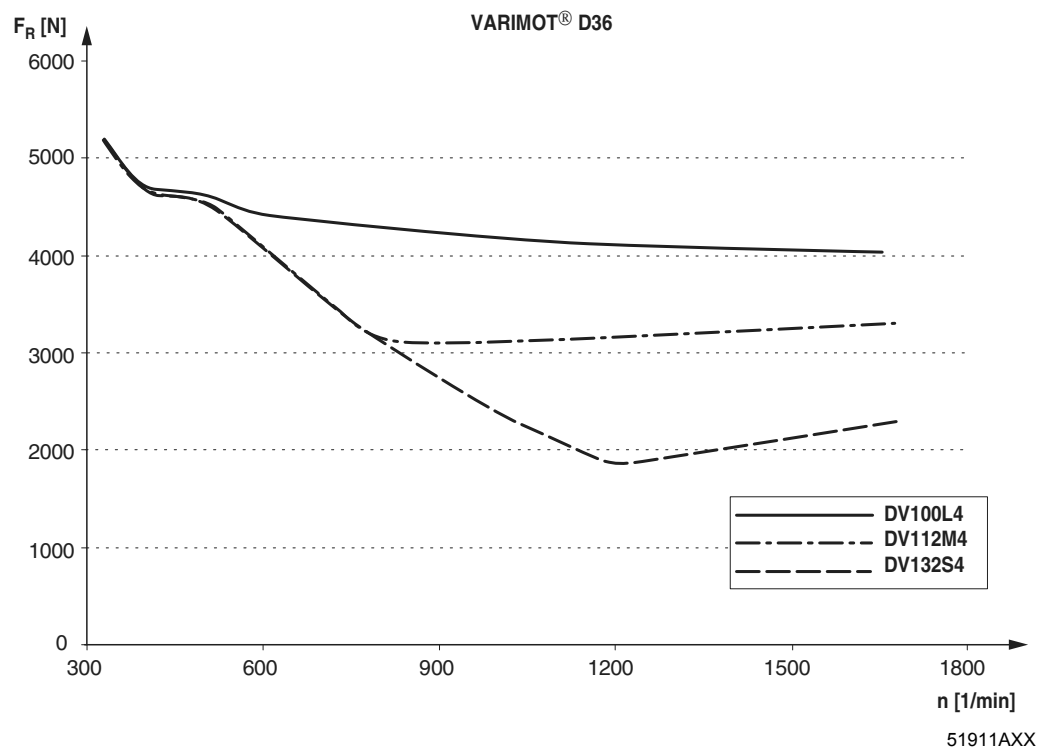
Fig. 4: Definition of force application of overhung loads

F_R [N] = permitted overhung load point of application at mid-point of shaft extension.



Installation Permitted overhung loads without primary gear unit







Installation

Before you begin

4.4 Before you begin

The drive may only be installed if

- The information on the nameplate of the drive matches the approved on-site explosion application range (equipment group, category, zone, temperature class or maximum surface temperature).
- The information on the nameplate of the drive matches the voltage supply system.
- The drive is undamaged (no damage caused by transportation or storage).
- It is certain that the following requirements have been met:



- Ambient temperature between -20 °C (-4 °F) and $+40\text{ °C}$ ($+104\text{ °F}$)
- No oils, acids, gas, vapors, radiation, potentially explosive atmospheres, etc.
- Enclosure has been verified.

4.5 Preliminary work

Variable speed gear units



Risk of material damage

Do not let the solvent come into contact with the sealing lips of the oil seals or on the wide V-belt.

The output shafts and flange surfaces must be thoroughly cleaned of anti-corrosion agents, contamination or such (use a commercially available solvent).



Please note:

- The service life of the lubricant in the bearings is reduced if the unit is stored for ≥ 1 year.

Anti-friction bearing grease

	Ambient temperature	Base	Original filling	Brand
Gear unit anti-friction bearing	-20 °C (-4 °F) to $+40\text{ °C}$ ($+104\text{ °F}$)	Synthetic	Mobiltemp SHC 100	Mobil



4.6 Installation



- The variable speed gearmotor may only be mounted or installed on a level¹⁾, vibration-damping and torsionally rigid support structure. Do not tighten housing legs and mounting flanges against each other.
- **VARIMOT® version HS (handwheel with position indication) must be mounted so that the adjusting spindle is horizontal; otherwise the position indication will not function properly.**
- **The breather valves must be easily accessible. The plastic plug of the condensation drain hole at the lowest position must be removed before operation (danger of corrosion).**
- Carefully align the variable speed gear drives to avoid overloading the output shafts (observe permitted overhung loads and axial forces).
- Do not hit or hammer the shaft end.
- Ensure an unobstructed cooling air supply and that air heated by other apparatus cannot be drawn in and reused. The cooling air may not exceed a temperature of 40 °C (104 °F).
- VARIMOT® gear units are supplied in corrosion-resistant versions (version B) for use in damp areas or outdoors. Any damage to the coating (e.g. on the breather valve) must be repaired.

*Installation in
damp locations
or outdoors*

*Cable entry,
cable gland*

- All **cable entries** are provided with ATEX certified plugs.
- To establish the **correct cable entry**, the plugs are replaced by **ATEX certified cable glands with strain relief**.
- Select the cable gland according to the outer diameter of the cable used.
- All **non-required cable entries must be sealed** with an ATEX certified plug after installation is completed.
- Coat the threads of cable glands and filler plugs with sealing compound and tighten them well – then coat them again. Properly seal the cable entry.
- Properly clean the sealing surfaces of the terminal box and terminal box cover before reassembly. Replace brittle gaskets.

*Painting the
gear unit*

If all or some of the surfaces of the drive are to be painted, make sure that you carefully mask over the breather valve and the oil seals. Remove the strips of tape after completing the painting work.

¹ Maximum permitted flatness error for flange mounting (approximate values with reference to DIN ISO 1101):
with → flange 120 ... 600 mm max. error 0.2 ... 0.5 mm



Required tools/ resources

- Set of wrenches
- Mounting device
- Compensation elements (shims, spacing rings), if necessary
- Mounting materials for output components

Installation tolerances

Shaft end	Flanges
Diameter tolerance in accordance with DIN 748 • ISO k6 for solid shafts with $d, d_1 \leq 50$ mm • ISO k7 for solid shafts with $d, d_1 > 50$ mm • Center bore in accordance with DIN 332, shape DR.	Centering shoulder tolerance in accordance with DIN 42948 • ISO j6 at $b_1 \leq 230$ mm • ISO h6 with $b_1 > 230$ mm



4.7 Gear units with solid shafts



Only use ATEX approved input and output components.



Input and output elements such as belt pulleys, couplings, etc. must have protection against contact.



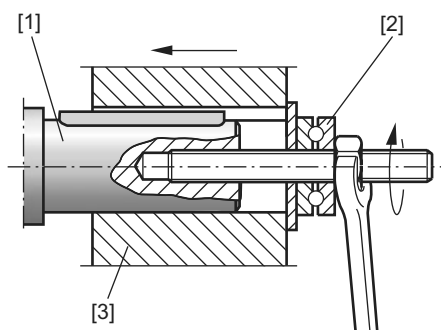
- Never drive belt pulleys, couplings, pinions, etc. onto the shaft end by hitting them with a hammer (this will cause damage to bearings, housing and the shaft).
- With belt pulleys, ensure the belt is correctly tensioned according to manufacturer's specifications.



Assembly is easier if you first apply lubricant to the output element or heat it up briefly (to 80 – 100 °C [176 – 212 °F]).

Mounting of input and output components

The following figure shows an example of a mounting device for installing couplings or hubs on variable speed gear unit or motor shaft ends. You can remove the thrust bearing on the mounting device, if necessary.



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Fig. 5: Example of a mounting device

- [1] Gear shaft end
[2] Thrust bearing

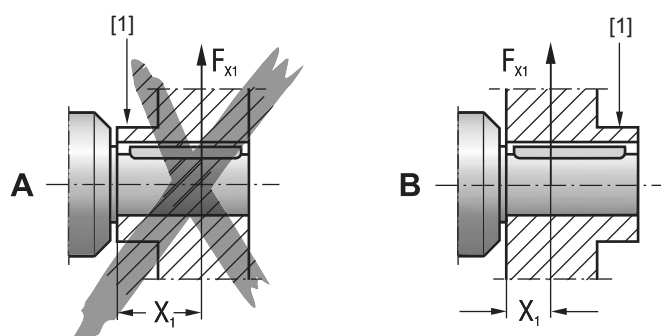
- [3] Coupling hub



Installation

Gear units with solid shafts

The following illustration shows the correct mounting arrangement (**B**) of a gear wheel or chain sprocket for avoiding impermissibly high overhung loads.



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Fig. 6: Correct mounting arrangement of a gear or sprocket wheel

- A Incorrect
B Correct

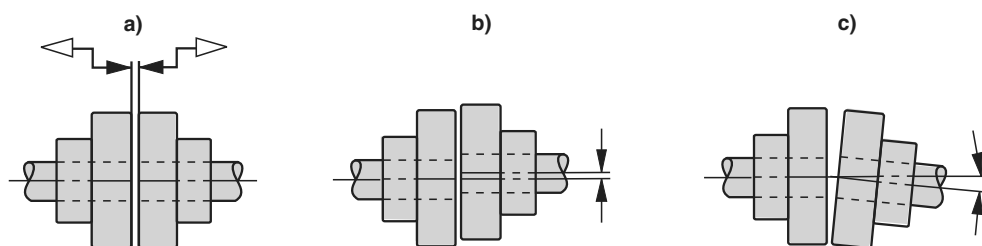
[1] Hub

- Do not install input and output elements without a mounting device. Use the center bore with the thread on the shaft end for positioning.
- Power transmission elements should be balanced after fitting and must not give rise to any excessive radial or axial forces (see the "Geared Motors" catalog for permitted values).

Mounting couplings

Couplings must be mounted and balanced according to the information provided by the coupling manufacturer:

- Maximum and minimum clearance
- Axial offset
- Angular offset



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Fig. 7: Clearance and misalignment for coupling mounting



5 Startup

5.1 Installation and setup of optional equipment

Speed monitoring



Category 2G variable speed gear units may only be started up with speed monitoring.

Standard version

The standard version of the explosion-proof VARIMOT[®] variable speed gear unit features an M14x1 tapped hole (flange mounted VARIMOT[®] D16/26, version with terminal strips in the terminal box) or M18x1 (flange mounted VARIMOT[®] D36/46, version with plug connector) for installing a voltage encoder in the gear unit housing of the variable speed gear unit. Speed monitor and voltage encoder must be supplied and installed by the operator of the device.

Additional versions:

The following additional version of speed monitoring are possible:

1. WEXA:
 - Speed monitor (incl. evaluation electronics) with IGEX voltage encoder and digital remote speed indicator.
2. WEX:
 - Speed monitor (incl. evaluation electronics) with IGEX voltage encoder.
3. IGEX:
 - This version consists only of the IGEX voltage encoder in the scope of delivery. The speed monitor must be supplied and installed by the operator of the device.

Manufacturer's data

Voltage encoder in WEXA/WEX/IGEX version for VARIMOT[®] D16/26:

Manufacturer:	Pepperl + Fuchs, Mannheim
Type:	NJ2-11-N-G according to DIN 19234 (NAMUR), 100 mm connection cable
Housing:	M14x1
ATEX certification number:	TÜV 99 ATEX 1471

Voltage encoder in WEXA/WEX/IGEX version for VARIMOT[®] D36/46:

Manufacturer:	Pepperl + Fuchs, Mannheim
Type:	NJ5-18GM-N-V1 according to DIN 19234 (NAMUR), M12x1 plug-in connection
Housing:	M18x1
ATEX certification number:	TÜV 99 ATEX 1471



Startup

Installation and setup of optional equipment

Speed monitor in WEXA/WEX version:

Manufacturer:	Pepperl + Fuchs, Mannheim
Type:	KFU8-UFC-Ex1.D
Auxiliary power:	DC 20 - 90 V / AC 48 - 253 V
ATEX certification number:	TÜV 99 ATEX 1471



All installation and setting notes given below refer to the speed monitor or voltage encoder in WEXA/WEX version.



If other speed monitors in the WEXA/WEX version are used, they must be installed and started up according to the manufacturer's documentation.



Installation and adjustment of the WEXA/WEX speed monitor



The speed monitor must be located outside the potentially explosive atmosphere.

1. Read the operating instructions of the speed monitor manufacturer before you begin with the installation.

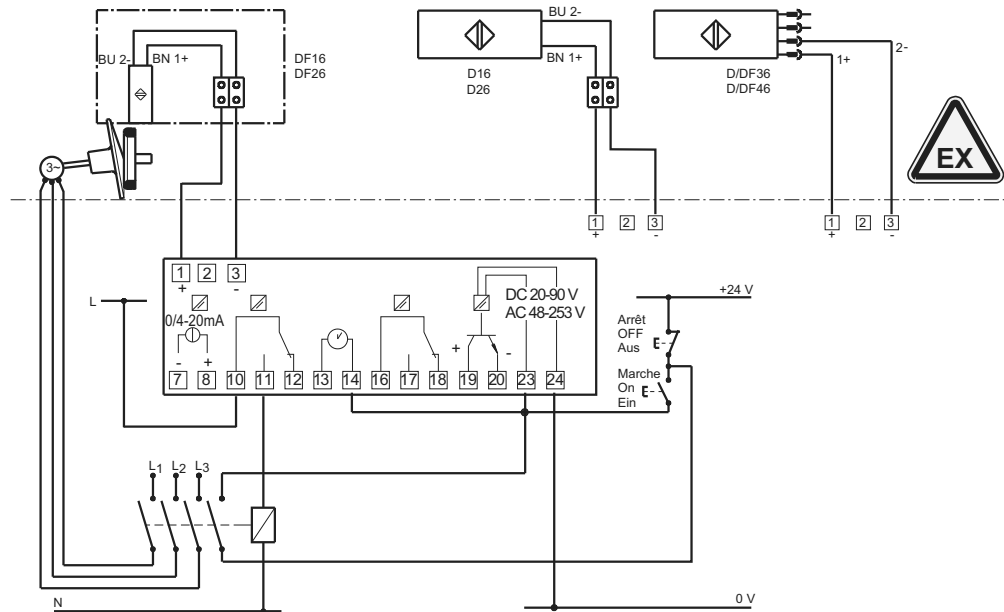


Fig. 8: Connecting the WEXA/WEX speed monitor

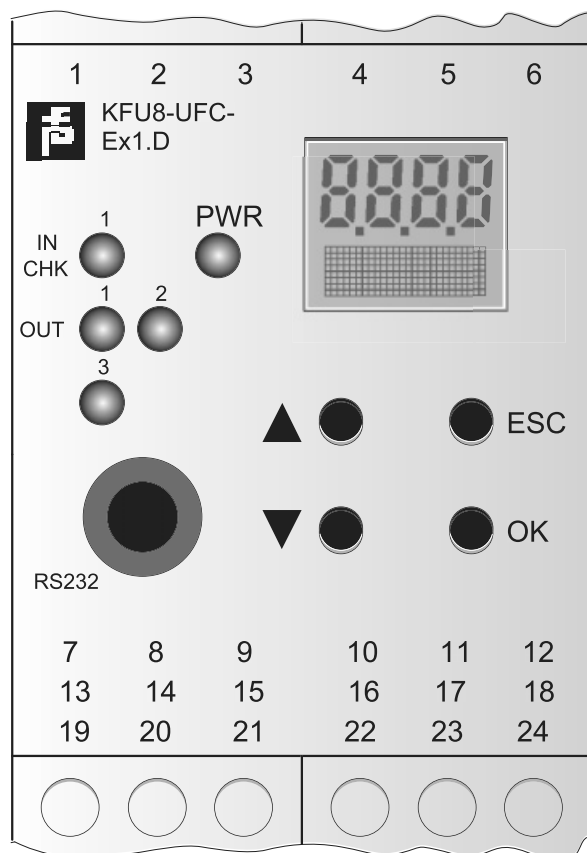
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- | | |
|--|---|
| [1] Sensor + | [14] Startup bypass |
| [3] Sensor – | [23] DC 24 V voltage supply, + |
| [10] Relay 1 (shared terminal) | [24] DC 24 V voltage supply, – |
| [11] Relay 1 (normally open contact) | [19] Auxiliary output for customer application, + |
| [12] Relay 1 (normally closed contact) | [20] Auxiliary output for customer application, – |

2. Perform the basic adjustment of the speed monitor in accordance with the operating instructions of the speed monitor manufacturer and table 1.



Front side of the speed monitor



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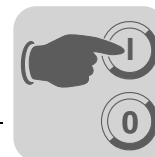
Fig. 9: WEXA/WEX speed monitor

Front side of the speed monitor:

LED in CHK 1 (yellow/red)	For indicating input pulses (flashes yellow), input interference (blinks red), and unit malfunction (continuously red)
LED PWR (green)	For indicating the supply voltage
LED OUT 1 (yellow)	For indicating that relay 1 is active
LED OUT 2 (yellow)	For indicating that relay 2 is active
LED OUT 3 (yellow)	For indicating that the transistor is active
RS 232	The RS 232 interface for connecting a PC for setting parameters and diagnosing the UFC with PACTware.
Display	For indicating measured values and faults in parameter assignment mode



The start bypass time may not exceed 3 seconds. This setting must be carefully performed and verified by a final measuring step.



*Setting the
switching
frequency via
parameters*

Variable speed gear unit type	Motor pole no.	Motor frequency [Hz]	Switching speed [rpm]	Switching frequency [Hz]	Pulses per revolution
D / DF16D / DF16B	4	50	300	30.0	6
	6		194	19.4	
	8		150	15.0	
	4	60	375	37.5	
	6		240	24.0	
	8		187	18.7	
D / DF26D / DF26B	4	50	329	32.9	
	6		211	21.1	
	8		159	15.9	
	4	60	403	40.3	
	6		258	25.8	
	8		202	20.2	
D / DF36D / DF36B	4	50	296	29.6	
	6		194	19.4	
	8		142	14.2	
	4	60	356	35.6	
	6		237	23.7	
	8		178	17.8	
D / DF46D / DF46B	4	50	363	36.3	
	6		243	24.3	
	8		183	18.3	
	4	60	441	44.1	
	6		294	29.4	
	8		221	22.1	

**Installation
and adjustment
of other speed
monitors**

If other speed monitors are used, they must feature an intrinsically safe sensor input (identification color: blue) for evaluation of sensors according to DIN 19234 (NAMUR) and be approved for use of this sensor in potentially explosive atmospheres.



The voltage encoder (sensor) generally features a blue connection lead and must conform to DIN 19234 (NAMUR). The corresponding inspection number may be attached to the voltage encoder or the connection cable.



If the switching speed of the variable speed gear unit is less than that in the table (see previous page), the drive motor must be immediately disconnected from its supply voltage.

The cause of the problem must be eliminated and the operation of the variable speed gear unit must be stopped for at least 15 minutes before restarting the variable speed gear unit. If incorrect operation by the operating personnel cannot be ruled out, this interval should be triggered by an automatic restart lockout.

If vibrations or increased operating noises are noticeable after restarting the variable speed gear unit, the friction ring was damaged during the blocking and must be replaced (see Sec. "Inspection/maintenance", "Replacing friction ring").



**Installing/
connecting the
IGEX voltage
encoder**

1. Rotate the output shaft of the variable speed gear unit until the machined casting surface of the friction ring carrier can be seen through the tapped hole in the gear unit housing.
2. Voltage encoder:

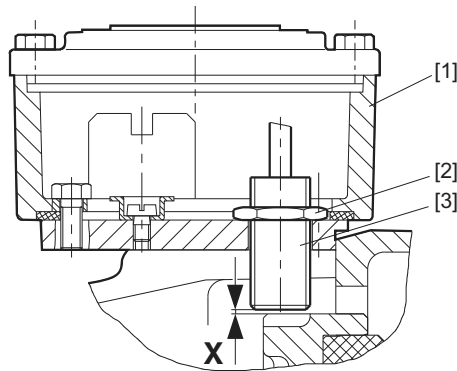


Fig. 10: Setting the switching interval X for VARIMOT® D16/26 in the terminal box

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- | | |
|------------------|---------------------|
| [1] Terminal box | [3] Voltage encoder |
| [2] Lock nut | |

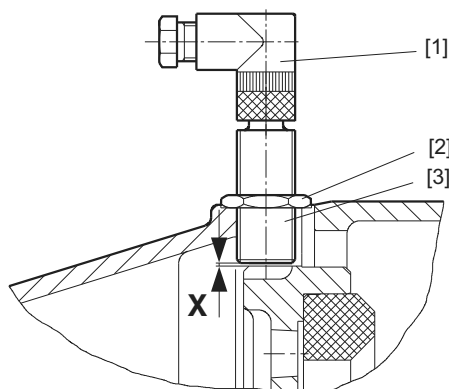


Fig. 11: Setting the switching interval X for VARIMOT® D36/46 via plug connector

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- | | |
|--------------------|---------------------|
| [1] Plug connector | [3] Voltage encoder |
| [2] Lock nut | |

- Carefully screw the voltage encoder into the thread of the variable speed gear unit housing until the voltage encoder [3] rests on the friction ring carrier.
- Turn the encoder back by one turn and secure with lock nut [2].

The switching interval X is now set as follows:

- For VARIMOT® D16/26 to 1 mm
- For VARIMOT® D36/46 to 2 mm

During operation, the voltage encoder supplies six pulses per revolution at this switching interval.

3. Connect the voltage encoder to the WEX speed monitor as follows:
 - VARIMOT® D16/26 via terminal strips in the terminal box
 - VARIMOT® D36/46 via plug connector



Startup

Installation and setup of optional equipment

Changing switching interval X

If no circuit state change occurs at the voltage encoder with rotating shaft of the variable speed gear unit operating at switching interval X, then the switching interval can be changed. The circuit state change is indicated by the yellow LED on the front side of the speed monitor (page 24).

1. If the **yellow LED** on the speed monitor is **constantly lit**, turn the voltage encoder a half turn counterclockwise at a time and check to see if it is functioning.
2. If the **yellow LED** on the speed monitor is **not lit**, turn the voltage encoder **at most two times** (for D16/26) or **six times** (for D36/46) by 90 degrees in clockwise direction.



Do not screw the voltage encoder more than half a turn (for D16/26) or 1.5 turns (for D36/46) into the mounting hole because the voltage encoder would be destroyed by a collision with the rotating recesses of the friction ring carrier.

3. If a circuit change still does not occur, check the voltage supply of the voltage encoder using the evaluation electronics (with WEX version).

Contactless digital remote speed indicator



Observe the applicable wiring regulations for potentially explosive areas during the electrical installation of optional equipment.

The contactless digital remote speed indicator, which is included in the scope of delivery with the WEXA version, is connected to the pulse output of the speed monitor type KFU8-UFC-Ex1.D by Pepperl + Fuchs.

Manufacturer:	Dr. Horn
Type:	HDA 4110-50
Display unit:	Digital
Power supply connection:	115 or 230 V, 50 - 60 Hz
Power consumption:	Approx. 4.2 VA
Encoder connection:	With two-core cable, shielded

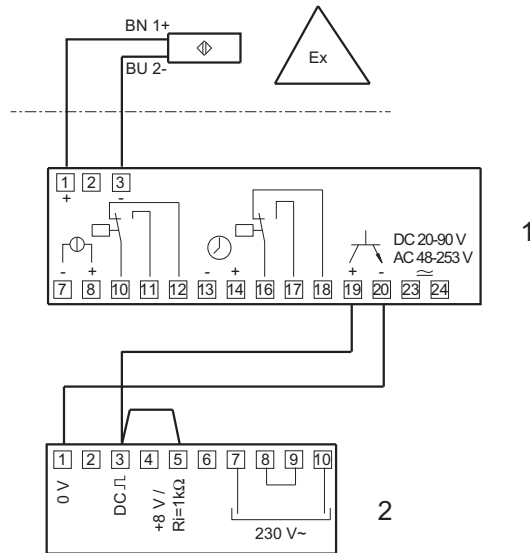


Connection/
adjustment



1. Connect the unit according to the wiring diagram

This wiring diagram applies only to digital indicator units type HDA 4110-50 by Dr. Horn in combination with speed monitors type KFU8-UFC-Ex1.D by Pepperl + Fuchs.



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Fig. 12: Wiring diagram of digital remote speed indicator to speed monitor

- [1] Speed monitor type KFU8-UFC-Ex1.D by Pepperl + Fuchs
- [2] Digital remote speed indicator type HDA 4110-50 by Horn

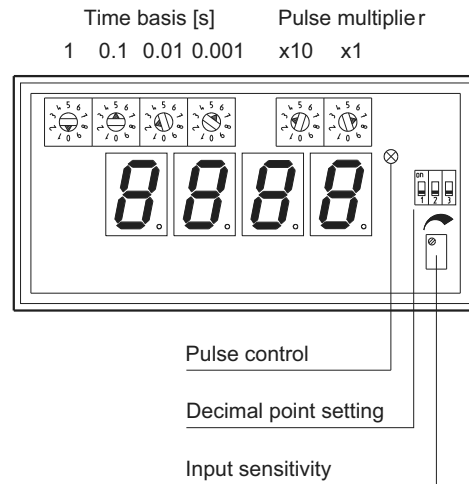
2. Note the jumpers:

- Between terminals 3 and 5
- Between terminals 8 and 9 for AC 230 V auxiliary power supply



With an auxiliary power supply of AC 115 V, the wiring of terminals 7, 8, 9, and 10 must be changed according to the manufacturer's documentation.

3. Adjust measuring interval (see the following figure and Sec. "Calculation examples digital remote speed indicator" on page 31):
 - Calculation using a formula
 - Data according to table 4
4. Adjust input sensitivity (figure 12):
 - Turn "input sensitivity" potentiometer clockwise until pulse indicator light starts to light up.



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Fig. 13: Adjusting the digital remote speed indicator

Adjusting the digital remote speed indicator

- Indicating accuracy: ± 1 of last digit
- Measuring interval (quartz): adjustment in increments of 0.001 s in the range of 0.010 s to 9.999 s after removing the front panel, recommended measuring interval: 0.5 to 2 s
- Pulse multiplier: Adjustment in increments in the range from 1 to 99 after removing the front panel
- Decimal point setting: Via DIP switch after removing the front panel
- Calculation of measuring interval:

$$M = \frac{60 \cdot A}{n \cdot k \cdot z \cdot f}$$

M = Measuring interval

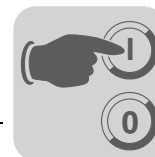
A = Four-digit display (at maximum speed), without decimal point indication

n = Speed (see following table)

k = Pulse multiplier ≥ 1

z = Pulses/revolution (see following table)

f = Calculation factor (at 50 Hz = 1, at 60 Hz = 1.2)



Reference data of digital remote speed indicator

Type/size VARIMOT®	Pulses/ revolution	Reference speed VARIMOT® [rpm]		
		4-pole	6-pole	8-pole
D 16	6	1690	1065	833
D 26		1825	1200	885
D 36		1675	1080	825
D 46		1610	1073	850

Calculation examples for digital remote speed indicator

	Example 1	Example 2
Drive	R107R77VU21WEXA/II2G eDT90L4	R107R77VU21WEXA/II2G eDT90L4
Data	Output speed Pulses/revolution Max. speed of variable speed gear unit (see the table on page 31) $n_a = 1.0 - 6.3$ $z = 2$ $n = 3100 \text{ rpm}$	Output speed Pulses/revolution Max. speed of variable speed gear unit $n_a = 1.0 - 6.3$ $z = 2$ $n = 3100 \text{ rpm}$
Desired indication	Output speed $A = 1.000 - 6.300 \text{ rpm}$	Belt speed $A = 0.114 - 0.72 \text{ m/min}$
$M = \frac{60 \cdot A}{n \cdot k \cdot z \cdot f}$	$M = \frac{60 \cdot 6300}{3100 \cdot 1 \cdot 2 \cdot 1} = 60.96 \text{ s}$	$M = \frac{60 \cdot 0720}{3100 \cdot 1 \cdot 2 \cdot 1} = 6.968 \text{ s}$
Recommended measuring interval	0.5 – 2 s (max. 9.999 s)	
Calculation with new pulse multiplier	$k = 50$ $M = \frac{60 \cdot 6300}{3100 \cdot 50 \cdot 2 \cdot 1} = 1.219 \text{ s}$	$K = 8$ $M = \frac{60 \cdot 0720}{3100 \cdot 8 \cdot 2 \cdot 1} = 0.871 \text{ s}$
Device setup	Measuring interval: [1] [2] [1] [9] Pulse multiplier: [5] [0] Decimal point setting: 1	Measuring interval: [0] [8] [7] [1] Pulse multiplier: [0] [8] Decimal point setting: 1



6 Inspection and Maintenance



Strict adherence to the inspection and maintenance intervals is absolutely necessary to ensure safe working conditions and explosion protection.



- Strictly observe the safety notes in the individual sections.
- All maintenance work must be carefully performed by qualified personnel.
- Work on the gear unit only when the machine is not in use. Prevent the drive unit from unintentionally starting up (for example, by locking the keyswitch or removing the fuses from the power supply). Place an information sign by the on-switch to warn that the gear unit is being worked on.
- Use only OEM spare parts from the appropriate and valid spare parts list; otherwise, the explosion rating of the variable speed drive becomes void.

6.1 Inspection and maintenance intervals

Unit/unit part	Interval	What to do?	Details on page ...
VARIMOT®	As required	Eliminate dust accumulation > 5 mm by cleaning	
VARIMOT®	Weekly	Pass through speed range	
VARIMOT®	Every 3000 operating hours, at least every 6 months	• Check torsional play • Checking the bearings • Check oil seals and replace with original SEW-EURODRIVE spare parts in case of heavy wear (do not install in the same track) • Check running noise/temperature of anti-friction bearing Interior of the variable speed gear unit: • Check for dust accumulation • Remove existing dust deposits	See "Checking torsional play" (see next page) See "Measuring temperature of anti-friction bearing" on page 36
VARIMOT®	Every 6000 operating hours	Replace the friction ring	See "Replacing the friction ring" on page 35



6.2 Before you begin

Required

tools/resources

- Set of wrenches
- Hammer
- Drift or punch drift
- Snap ring, mounting press

6.3 Checking torsional play

The torsional play of the output shaft is increased through wear of the friction ring. The torsional play can be checked as follows:

1. Remove fan cover of drive motor
2. Adjust output speed to 1:1 (approximately value "80" on the scale of the position indication, see figure 3 on page 11)
3. Check torsional play
 - At motor fan blade
 - With fixed drive shaft
4. Torsional play > 45°:
 - Check friction ring (see "Checking and replacing the friction ring")



6.4 Checking the friction ring

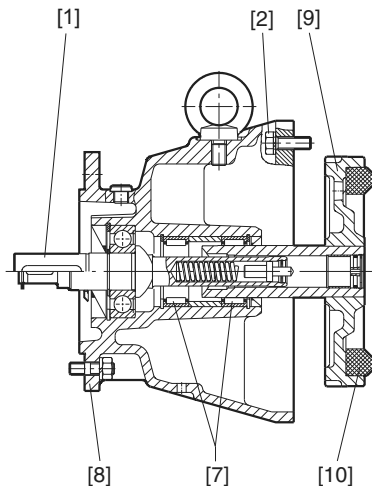


Fig. 14: Checking/replacing friction ring

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- | | |
|---------------------------|--------------------|
| [1] Shaft | [8] Housing |
| [2] Retaining screws | [9] Hollow shaft |
| [7] Needle roller bearing | [10] Friction ring |

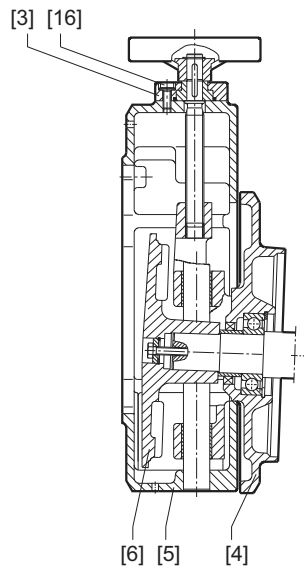


Fig. 15: Checking/replacing friction ring

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- | | |
|---------------------|----------------------|
| [3] Flange | [6] Drive disk |
| [4] Adjusting plate | [16] Retaining screw |
| [5] Housing cover | |



1. Loosen all retaining screws [2]
2. Disconnect drive between housing cover [5] and housing [8]
3. Check friction ring
 - If chamfers are visible: friction ring is OK
 - If friction ring is damaged or chamfer is ground off: replace friction ring (see "Replacing the friction ring")

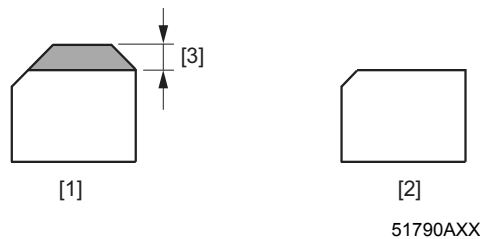


Fig. 16: Checking the friction ring

- | | |
|------------------------|-----------------|
| [1] New friction ring | [3] Wear height |
| [2] Worn friction ring | |

6.5 Replacing the friction ring

1. Remove voltage encoder
2. Pull entire hollow shaft [9] from housing [8]
3. Remove friction ring [10] from hollow shaft using a hammer and drift or drift punch
4. Place new friction ring on a clean, level base
5. Place complete hollow shaft on friction ring
 - Precenter via friction ring offset
6. Press hollow shaft and friction ring together using slight pressure (if possible, use hand lever press) until stop is reached
7. Lubricate needle bearing [7] with anti-friction bearing grease
8. Clean bearing surface:
 - Friction ring:
Use dry paper or cloth
 - Drive disk [6]:
Use degreasing detergent
9. Push entire hollow shaft with friction ring into the housing:
 - Turn the hollow shaft during insertion until cam lines are engaged (do not turn hollow shaft any further)
 - Carefully join housing and housing cover and tighten evenly
10. Check torsional play at output shaft
 - Correct: minor torsional play is noticeable
11. Mount voltage encoder
12. Switch on variable speed gearmotor:
 - Slowly pass through the speed range
 - Correct: drive runs noise-free and vibration-free



6.6 Measuring the temperature of the anti-friction bearing



To ensure safe working conditions and explosion protection, it is necessary that the temperature of the anti-friction bearing does not exceed 100 °C (212 °F) at test points T1 and T2 (see following figure).



If the temperature exceeds 100 °C (212 °F), replace the affected anti-friction bearing.



The temperature of the anti-friction bearing can be measured with commercially available temperature measuring probes. Important: Only use temperature measuring probes with a maximum diameter of 4 mm (condensation drain hole).

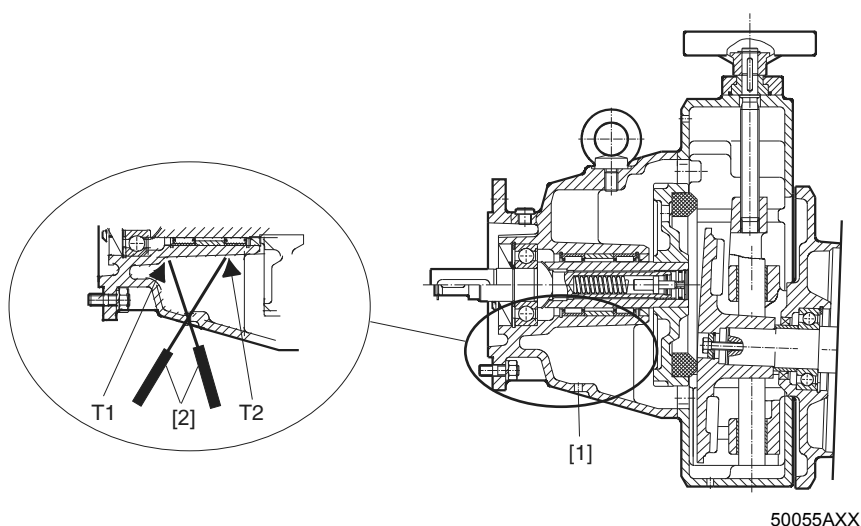


Fig. 17: Measuring the temperature of the anti-friction bearing



1. The temperature of the bearing may only be measured during standstill.
2. Insert the temperature measuring probe [2] through the condensation drain hole [1] directly after the variable speed gear unit has stopped.
 - Depending on the type of variable speed gear unit, the condensation drain hole has the following diameter:

Variable speed gear unit type	∅ Condensation drain hole
D 16	6.6 mm
D 26	9 mm
D 36	6 mm
D 46	6 mm

3. Measure the bearing temperature at test points T1 and T2. If the bearing temperature exceeds 100 °C (212 °F) at one of the test points, the respective anti-friction bearing must be replaced.



6.7 *Completing the inspection/maintenance process*



- Ensure that the variable speed drive is assembled correctly and all openings have been plugged after service and maintenance work.
- Perform safety and function tests following all maintenance and repair work.



7 Operation and Service



- To eliminate malfunctions, the gear unit and additional equipment must be deactivated. Prevent the drive unit from starting up unintentionally (for example, by locking the keyswitch or removing the fuses from the power supply). Place an information sign by the on-switch to warn that the gear unit is being worked on.
- Strictly observe the safety notes in the individual sections.

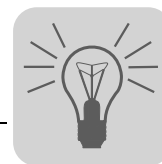
7.1 Customer service

Please provide the following information if you require the assistance of our customer service:

- Nameplate information (complete)
- Nature and extent of the problem
- Time the circumstances of the problem
- Presumed cause

7.2 Malfunction of VARIMOT[®] speed gear units

Problem	Possible cause	Solution
Drive slips or speed monitoring is triggered	Friction ring is worn	• Replace friction ring (see Sec. "Inspection / Maintenance", Replacing the friction ring)
	Friction ring or drive disc contact surface is contaminated	• Replace friction ring (see Sec. "Inspection and Maintenance", Replacing the friction ring) • Clean drive disc with solvent or similar product
	Load is too high	Check power consumption and reduce to catalog values
Drive warms up excessively	Load is too high	See above
Drive is too loud	Friction ring is damaged Note: Damage can occur, for instance • After brief stalling of the drive • With impulse loading of the drive	1. Eliminate the cause 2. Replace friction ring with original SEW spare part (see Sec. "Inspection and Maintenance", Replacing the friction ring)
Meshing/grinding noise	Bearing damage:	Change bearing (call customer service)
Rated motor power is not transferred	Speed range too low	Increase speed range



7.3 WEXA/WEX speed monitor

Problem	Possible cause	Solution
Voltage encoder is not functioning	Voltage encoder is not properly connected	Check voltage supply of voltage encoder using the evaluation electronics With correct voltage supply: • Consult manufacturer's documentation • Voltage encoder is not suitable for connection to the evaluation electronics (IGEX version) • Replace voltage encoder
LED on voltage encoder or speed monitor is not lit or is lit constantly	Switching interval is too long or too short	Set switching interval (see Sec. "Startup", Changing the switching interval)
No display	• Display unit is not properly connected • Voltage supply is missing or interrupted	• Connect display unit correctly according to wiring diagram • Check voltage supply according to wiring diagram
Incorrect display	Display unit is not properly adjusted	Check settings



Declaration of Conformity

Variable speed gear units category 2G, VARIMOT® series 16-46

8 Declaration of Conformity

8.1 Variable speed gear units category 2G, VARIMOT® series 16-46



Konformitätserklärung

Declaration of Conformity

(im Sinne der Richtlinie 94/9/EG, Anhang VIII)

(according to EC Directive 94/9/EC, Appendix VIII)

SEW-EURODRIVE GmbH & Co
Ernst Blickle Str. 42
D-76646 Bruchsal

SEW-EURODRIVE

erklärt in alleiniger Verantwortung, dass die Verstellgetriebe der Kategorie 2G der Baureihe VARIMOT® 16-46 auf die sich diese Erklärung bezieht, mit der

declares in sole responsibility that the variable speed gear drives in categorie 2G of the VARIMOT® 16-46 series that are subject to this declaration are meeting the requirements set forth in

Richtlinie 94/9/EG

Directive 94/9/EG

übereinstimmen.

Angewandte Norm:

EN1127-1

Applicable standard:

EN1127-1

SEW-EURODRIVE hinterlegt die gemäß 94/9/EG Anhang VIII geforderten Unterlagen bei benannter Stelle:

FSA GmbH, EU-Kennnummer 0588

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FSA GmbH, EU Code 0588

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Bruchsal, den 09.08.2000

Ort und Datum der Ausstellung

Place and date of issue

ppa

Funktion: Vertriebsleitung / Deutschland

Function: Head of Sales / Germany

8.2 Variable speed gear units category 3G and 3D, VARIMOT® series 16-46



Konformitätserklärung

Declaration of Conformity

(im Sinne der Richtlinie 94/9/EG, Anhang VIII)

(according to EC Directive 94/9/EC, Appendix VIII)

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D-76646 Bruchsal

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Applicable standard:

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Function: Head of Sales / Germany



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Sales	Praha	SEW-EURODRIVE CZ S.R.O. Business Centrum Praha Luzna 591 CZ-16000 Praha 6 - Vokovice	Tel. +420 220121234 Fax +420 220121237 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz
Denmark			
Assembly Sales Service	Kopenhagen	SEW-EURODRIVEA/S Geminivej 28-30, P.O. Box 100 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 http://www.sew-eurodrive.dk sew@sew-eurodrive.dk
Estonia			
Sales	Tallin	ALAS-KUUL AS Mustamäe tee 24 EE-10620 Tallin	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee
Finland			
Assembly Sales Service	Lahti	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 sew@sew.fi http://www.sew-eurodrive.fi
Gabon			
Sales	Libreville	Electro-Services B.P. 1889 Libreville	Tel. +241 7340-11 Fax +241 7340-12
Great Britain			
Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk
Greece			
Sales Service	Athen	Christ. Boznos & Son S.A. 12, Mavromichali Street P.O. Box 80136, GR-18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr



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Hong Kong			
Assembly Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 2 7960477 + 79604654 Fax +852 2 7959129 sew@sewhk.com
Hungary			
Sales Service	Budapest	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 office@sew-eurodrive.hu
India			
Assembly Sales Service	Baroda	SEW-EURODRIVE India Pvt. Ltd. Plot No. 4, Gidc Por Ramangamdi • Baroda - 391 243 Gujarat	Tel. +91 265 2831086 Fax +91 265 2831087 http://www.seweurodriveindia.com mdoffice@seweurodriveindia.com
Technical Offices	Bangalore	SEW-EURODRIVE India Private Limited 308, Prestige Centre Point 7, Edward Road Bangalore	Tel. +91 80 22266565 Fax +91 80 22266569 salesbang@seweurodriveinindia.com
Ireland			
Sales Service	Dublin	Alpert Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458
Israel			
Sales	Tel-Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 lirazhandasa@barak-online.net
Italy			
Assembly Sales Service	Milano	SEW-EURODRIVE di R. Blicke & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 799781 http://www.sew-eurodrive.it sewit@sew-eurodrive.it
Ivory Coast			
Sales	Abidjan	SICA Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Tel. +225 2579-44 Fax +225 2584-36
Japan			
Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 sewjapan@sew-eurodrive.co.jp
Korea			
Assembly Sales Service	Ansan-City	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate Unit 1048-4, Shingil-Dong Ansan 425-120	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-korea.co.kr master@sew-korea.co.kr
Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 7139253 Fax +371 7139386 http://www.alas-kuul.com info@alas-kuul.com



Lebanon			
Sales	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 gacar@beirut.com
Lithuania			
Sales	Alytus	UAB Irseva Naujoji 19 LT-62175 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt http://www.sew-eurodrive.lt
Luxembourg			
Assembly Sales Service	Brüssel	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.caron-vector.be info@caron-vector.be
Malaysia			
Assembly Sales Service	Johore	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my
Mexico			
Assembly Sales Service	Queretaro	SEW-EURODRIVE MEXIKO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industriail Queretaro C.P. 76220 Queretaro, Mexico	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Morocco			
Sales	Casablanca	Afit 5, rue Emir Abdelkader MA 20300 Casablanca	Tel. +212 22618372 Fax +212 22618351 richard.miekisiak@premium.net.ma
Netherlands			
Assembly Sales Service	Rotterdam	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 http://www.vector.nu info@vector.nu
New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 241-020 Fax +47 69 241-040 http://www.sew-eurodrive.no sew@sew-eurodrive.no
Peru			
Assembly Sales Service	Lima	SEW DEL PERU MOTORES REDUCTORES S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe



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Poland			
Assembly Sales Service	Lodz	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Lodz	Tel. +48 42 67710-90 Fax +48 42 67710-99 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl
Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt
Romania			
Sales Service	Bucuresti	Sialco Trading SRL str. Madrid nr.4 011785 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro
Russia			
Assembly Sales Service	St. Petersburg	ZAO SEW-EURODRIVE P.O. Box 36 195220 St. Petersburg Russia	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru
Senegal			
Sales	Dakar	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 849 47-70 Fax +221 849 47-71 senemeca@sentoo.sn
Serbia and Montenegro			
Sales	Beograd	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor SCG-11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 dipar@yubc.net
Singapore			
Assembly Sales Service	Singapore	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com
Slovakia			
Sales	Bratislava	SEW-Eurodrive SK s.r.o. Rybnicna 40 SK-83107 Bratislava	Tel. +421 2 49595201 Fax +421 2 49595200 http://www.sew.sk sew@sew-eurodrive.sk
	Zilina	SEW-Eurodrive SK s.r.o. ul. Vojtecha Spanyola 33 SK-010 01 Zilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-97411 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk
Slovenia			
Sales Service	Celje	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net

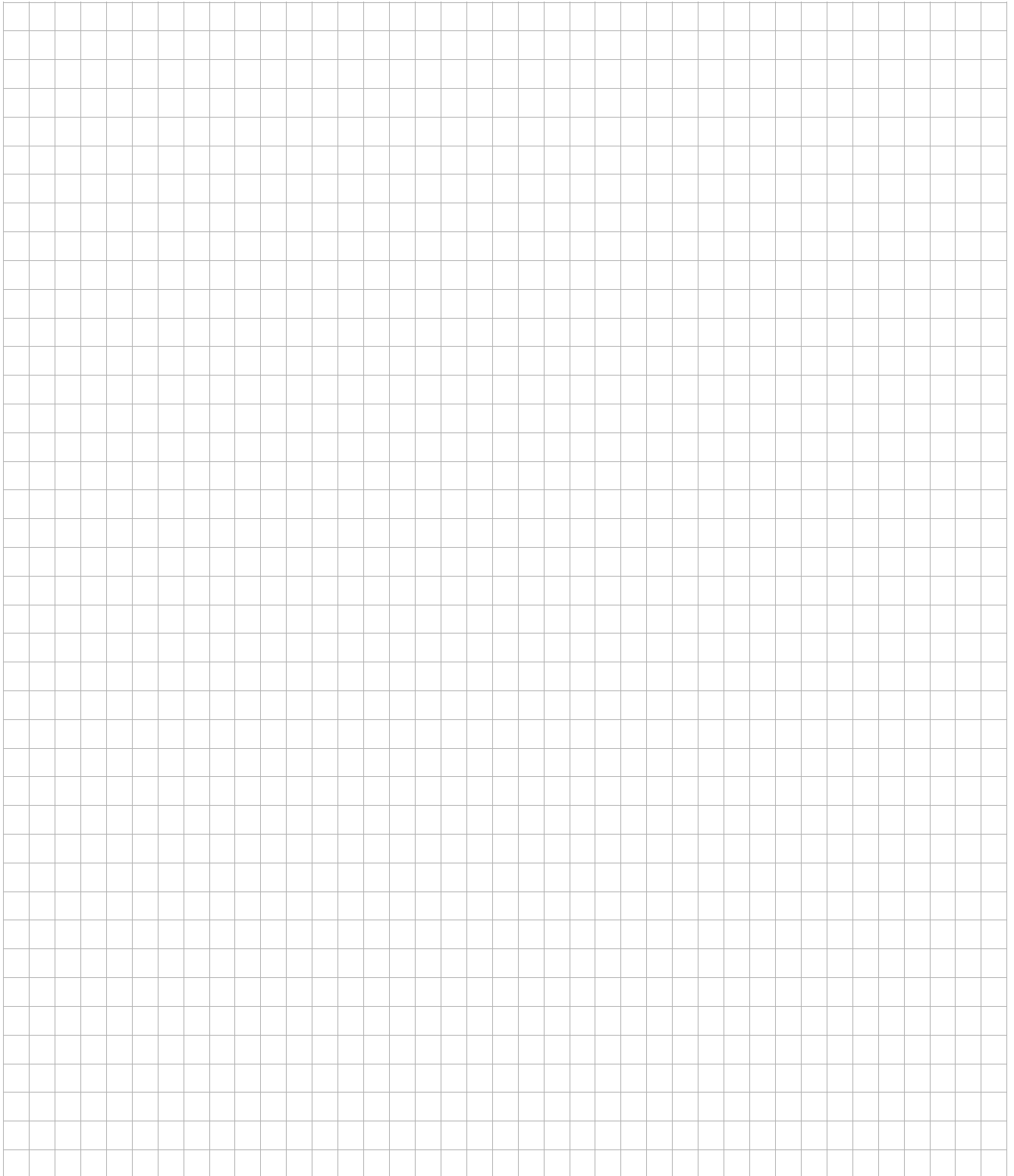


South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za dross@sew.co.za
	Capetown	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 dswanepoel@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 dtait@sew.co.za
Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 9 4431 84-70 Fax +34 9 4431 84-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es
Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442-00 Fax +46 36 3442-80 http://www.sew-eurodrive.se info@sew-eurodrive.se
Switzerland			
Assembly Sales Service	Basel	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch
Thailand			
Assembly Sales Service	Chon Buri	SEW-EURODRIVE (Thailand) Ltd. Bangpakong Industrial Park 2 700/456, Moo.7, Tambol Donhuaroh Muang District Chon Buri 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com
Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service 7, rue Ibn El Heithem Z.I. SMMT 2014 Mégrine Erriadh	Tel. +216 1 4340-64 + 1 4320-29 Fax +216 1 4329-76 tms@tms.com.tn
Turkey			
Assembly Sales Service	Istanbul	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419163 / 164 3838014/15 Fax +90 216 3055867 sew@sew-eurodrive.com.tr
Ukraine			
Sales Service	Dnepropetrovsk	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua



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USA			
Production Assembly Sales Service	Greenville	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manuf. +1 864 439-9948 Fax Ass. +1 864 439-0566 Telex 805 550 http://www.seweurodrive.com cslyman@seweurodrive.com
	San Francisco	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6381 cshayward@seweurodrive.com
	Philadelphia/PA	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Dayton	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	Dallas	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
Additional addresses for service in the USA provided on request!			
Venezuela			
Assembly Sales Service	Valencia	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 http://www.sew-eurodrive.com.ve sewventas@cantv.net sewfinanzas@cantv.net



How we're driving the world

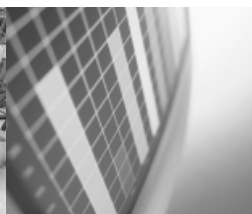
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